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Messrs. Edward Desor and Charles Jackson, Jr., were elected Fellows of the Academy.

Professor Spencer F. Baird, of Carlisle, Pennsylvania, was elected a Corresponding Member.

Three hundred and fifth Meeting.

February 1, 1848. — MONTHLY MEETING.

The PRESIDENT in the chair.

Professor Horsford read extracts from a letter from Professor Liebig, communicating the results of some experiments made with a view to determine the permeability of membranes to air, water, and various solutions. He has arrived at the conclusion, that the secretions from the blood-vessels and alimentary canal are directly produced by the evaporation from the skin and lungs, on the one hand, and the pressure of the atmosphere on the other.

Professor Horsford also made the observation, that chloroform, and several other compounds which taste sweet, may be written in the list of the various sweet bodies enumerated in his paper upon Glycocoll. To illustrate this he presented the following formulæ : —

" *Sweet Bodies.*

$C_{12} H_{10} O_{10}$ = Milk Sugar.
$C_{12} H_{11} O_{11}$ = Cane Sugar.
$C_{12} H_{12} O_{12}$ = Grape Sugar.

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article. As soon as a second observation is made, it must be communicated in like manner with the first, and with it the longitude of the place where the discovery is made, unless it take place at some known observatory. The expectation of obtaining a second observation will never be received as a satisfactory reason for postponing the communication of the first.

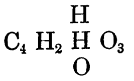
6. The medal will be assigned twelve months after the discovery of the comet, and no claim will be admitted after that period.

7. Messrs. Baily and Schumacher are to decide if a discovery has been made. If they differ, Mr. Gauss of Göttingen is to decide.

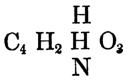
8. Messrs. Baily and Schumacher have agreed to communicate mutually to each other every announcement of a discovery.

Altona, April, 1840.

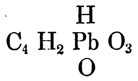
$C_4\,H_4\,O_4$ $= \frac{1}{3}$ of Grape Sugar.



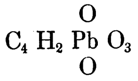
$C_4\,H_2\,\overset{H}{\underset{O}{H}}\,O_3$ = “ “



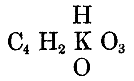
$C_4\,H_2\,\overset{H}{\underset{N}{H}}\,O_3$ = Sugar of Glue. Glycocoll.



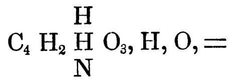
$C_4\,H_2\,\overset{H}{\underset{O}{Pb}}\,O_3$ = Sugar of Lead.



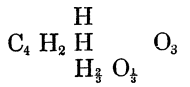
$C_4\,H_2\,\overset{O}{\underset{O}{Pb}}\,O_3$ $= \frac{1}{2}$ Citrate of Lead.



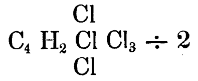
$C_4\,H_2\,\overset{H}{\underset{O}{K}}\,O_3$ = Acetate of Potassa.



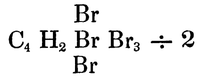
$C_4\,H_2\,\overset{H}{\underset{N}{H}}\,O_3$, H, O, = Nitric Ether.



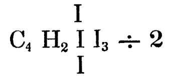
$C_4\,H_2\,\overset{H}{\underset{H_{\frac{2}{3}}\,O_{\frac{1}{3}}}{H}}\quad O_3$ $= \frac{2}{3}$ Glycerile oxide.



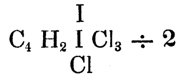
$C_4\,H_2\,\overset{Cl}{\underset{Cl}{Cl}}\,Cl_3 \div 2$ = Chloroform.



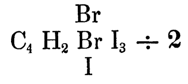
$C_4\,H_2\,\overset{Br}{\underset{Br}{Br}}\,Br_3 \div 2$ = Bromoform.*



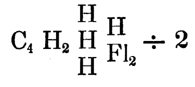
$C_4\,H_2\,\overset{I}{\underset{I}{I}}\,I_3 \div 2$ = Iodoform.



$C_4\,H_2\,\overset{I}{\underset{Cl}{I}}\,Cl_3 \div 2$ = Chloro-iodoform.



$C_4\,H_2\,\overset{Br}{\underset{I}{Br}}\,I_3 \div 2$ = Bromo-iodoform.



$C_4\,H_2\,\overset{H}{\underset{H}{H}}\,\overset{H}{Fl_2} \div 2$ = Hydrofluate of Methylene.†

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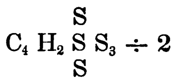
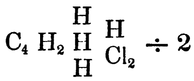
* For the observation that this and the following four bodies may be included in the series, the author is indebted to his friend Dr. Peirce, of the Cambridge Laboratory.

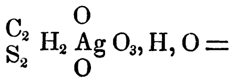
† The hydrofluate of methylene has a pleasant ethereal smell.



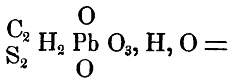
$$C_4\,H_2\,\begin{matrix}S\\S\\S\end{matrix}\,S_3 \div 2 = \text{Sulphoform. (?)}$$



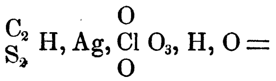
$$C_4\,H_2\,\begin{matrix}H\\H\\H\end{matrix}\,\begin{matrix}H\\Cl_2\end{matrix} \div 2 = \text{Chloride of Methyle.}$$



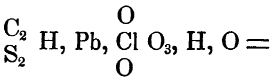
$$\begin{matrix}C_2\\S_2\end{matrix}\,H_2\,\begin{matrix}O\\Ag\\O\end{matrix}\,O_3, H, O = \text{Methyl-sulphite of Silver.}$$



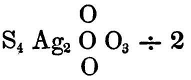
$$\begin{matrix}C_2\\S_2\end{matrix}\,H_2\,\begin{matrix}O\\Pb\\O\end{matrix}\,O_3, H, O = \text{Methyl-sulphite of Lead.}$$



$$\begin{matrix}C_2\\S_2\end{matrix}\,H, Ag, \begin{matrix}O\\Cl\\O\end{matrix}\,O_3, H, O = \text{Chloro-methyl-sulphite of Silver.}$$



$$\begin{matrix}C_2\\S_2\end{matrix}\,H, Pb, \begin{matrix}O\\Cl\\O\end{matrix}\,O_3, H, O = \text{Chloro-methyl-sulphite of Lead.}$$



$$S_4\,Ag_2\,\begin{matrix}O\\O\\O\end{matrix}\,O_3 \div 2 = \text{Hypo-sulphite of Silver.}$$

" It is not to be denied that there are bodies having the number of atoms occurring in sugar, and yet not tasting sweet. Still, the correspondence in constitution among so many bodies, containing such a variety of elements, and all having the common property of sweetness, is an interesting fact. *Do sweet bodies owe their sweetness to a common arrangement of their ultimate particles ?* or, in other words, *Have sweet bodies a common form ?*

" It may further be remarked, that the constitution of acids, as suggested by Davy in relation to inorganic acids, and applied by Liebig to organic acids, permits them to be written in a common formula $= H + x$; x representing all that part of the isolated acid not replaced by metal in neutralization. A few examples follow.

" *Sour Bodies.*

$H + Cl$ = Hydrochloric Acid.
$H + I$ = Hydroiodic "
$H + Br$ = Hydrobromic "
$H + F$ = Hydrofluoric "
$H + Cy$ = Prussic "

$H + SO_3$ = Sulphurous Acid.
$H + SO_4$ = Sulphuric "
$H + NO_6$ = Nitric "
$H + C_2 HO_4$ = Formic "
$H + C_2 O_4$ = Oxalic "
$H + C_4 H_3 O_4$ = Acetic "
$H + C_6 H_5 O_4$ = Metacetonic "
$H + C_8 H_7 O_4$ = Butyric "
etc., etc.

"*Have sour bodies also a common form?*

"The interest which attaches to the above formulæ will not be diminished by the consideration, that many *bitter bodies*, such as aloes, assafœtida, myrrh, and the resins in general, have a constitution referable to a single fundamental type. Heldt, in a recent elaborate paper, in Liebig's *Annalen*, upon Santonine and the formation of resins from essential oils, gives several probable modes of production, which may be expressed in the following formulæ. It will be seen that the constitution is such that a certain amount of hydrogen may be oxidated without the oxidation of the carbon. The general conception of Heldt has been long entertained by chemists, but has, in his paper, for the first time, met with a full exposition.

"*Bitter Bodies.*

$[C_{10} H_8]^n - H_x + O_x = R.$
$[C_{10} H_8]^n - H_x + O_x + [HO]_y = R.$
$[C_{10} H_8]^n - H_x + O_x + O_y = R.$
$[C_{10} H_8]^n - H_x + O_x + O_y + [HO]_z = R.$
$[C_{10} H_8]^n + [HO]_x = R.$"

Professor Peirce communicated the following elements of the "Orbit of Flora, computed at Göttingen, from normal places Oct. 22.5, Nov. 20.5, and Dec. 19.5," by Benjamin Apthorp Gould, Jr., A. A. S.

"Epoch 1848, Jan. 1.0, Berlin Mean Time.

	°	′	″	
Mean Anomaly	35	53	31.98	
Long. Perihelion	32	52	1.7	Mean Equinox.
Long. Asc. Node	110	18	50.8	
Inclination	5	52	55.9	

Log. mean daily sid. mot.	3.0358738
Log. eccentricity	9.1956181
Log. semiaxis major	0.3427552
Time of revolution	1193¼ sidereal days.

" The following are the results of the comparison of this orbit with observation : —

CALCULATED *minus* OBSERVED.

Date.	Right Ascension.				Declination.			
	Altona.	Berlin.	Ham-burg.	Cam-bridge.	Altona.	Berlin.	Ham-burg.	Cam-bridge.
1847, Oct. 21,				+ 1″.9				0″.0
22,	— 0″.7				— 0″.1			
25,	— 1.2	— 0″.8	+ 1″.5		+ 0.7	+ 3″.7	+ 1″.7	
26,	— 0.4				+ 0.5			
31,	— 0.3		+ 1.8		+ 0.1		— 2.8	
Nov. 1,		+ 1.2				+ 1.5		
2,		+ 2.0				+ 0.3		
8,	+ 1.5	+ 3.9	+ 6.9		+ 1.4	+ 1.7	+ 2.0	
9,			+ 4.1				+ 0.4	
10,	+ 0.4		+ 2.8		+ 2.1		— 1.6	
11,		+ 2.8				— 0.1		
12,		— 0.4	+ 1.9			+ 2.7	+ 0.3	
16,			+ 3.1				+ 2.2	
17,	+ 0.7	+ 0.7	+ 3.5		+ 0.7	+ 1.6	— 1.7	
18,	+ 0.6	+ 1.4	+ 3.8		— 2.5	+ 2.2	— 0.7	
21,			+ 1.2				+ 0.1	
22,			+ 1.9				+ 1.6	
24,	— 0.6	— 0.5	+ 1.2		+ 3.4	+ 1.6	+ 0.3	
25,		+ 0.2				+ 1.8		
27,	— 0.1	+ 1.7	+ 1.8		+ 2.1	+ 1.3	+ 1.1	
28,	+ 0.1		+ 4.8		— 2.3		+ 0.8	
Dec. 1,	+ 0.8				+ 4.3			
4,	+ 0.4		— 0.8		+ 2.1		+ 2.5	
7,		+ 3.6	+ 1.1	Göttin-gen.		+ 0.8	+ 1.0	Göttin-gen.
8,			+ 3.0				+ 2.9	
10,				+ 1″.5				+ 5″.0
11,				— 0.7				+ 3.4
12,				+ 0.9				+ 3.4
17,				— 0.5				
18,			+ 5.1	— 0.4			— 0.1	Tran-sit I.
19,			— 1.2				+ 1.9	
20,			+ 4.9				+ 1.2	
1848, Jan. 3,				+ 9.6				+ 4.7
5,				+ 7.0				+ 6.1